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Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in this application. Please amend the claims as follows:

Listing of claims:

What is claimed is:

Claims 1-18 (Cancelled).

19. (Currently Amended) A process for producing a catalyst for olefin cracking, the processing comprising the steps of:

providing an MFI type catalyst with a crystalline silicate framework;

formulating said MFI type crystalline silicate catalyst with a binder comprising silica to produce a formulated catalyst;

heating the formulated catalyst in steam to remove aluminum from the crystalline silicate framework;

extracting aluminum from the formulated catalyst by contacting the catalyst with a complexing agent to remove aluminum from pores of the framework deposited therein during the steaming step, thereby increasing the silicon/aluminum atomic ratio of the catalyst;

calcining the formulated catalyst at an elevated temperature;

wherein said MFI type crystalline silicate catalyst at the conclusion of the steaming and extraction of aluminum has a silicon/aluminum atomic ratio of at least 120; and

contacting the MFI type crystalline silicate catalyst with olefins, wherein said catalyst is used to crack said olefins.

20. **(Previously Presented)** The process of claim 19 wherein said silica binder is employed in an amount to provide a catalyst containing about 20 wt.% silica.

21. **(Previously Presented)** The process of claim 19 wherein said silica binder is present in an amount of about 50 wt.% silica.

22. **(Cancelled).**

23. **(Currently Amended)** A process for producing an olefin cracking catalyst to produce ethylene and propylene from C₄ to C₁₀ olefins, comprising:

providing an MFI type catalyst containing aluminum and silicon in a crystalline silicate framework to provide an initial silicon/aluminum atomic ratio;

formulating said crystalline silicate catalyst with a silica binder to produce a formulated MFI type catalyst containing said MFI type crystalline silicate catalyst and the silica binder;

subsequent to the formation of said formulated MFI type crystalline silicate catalyst, subjecting said catalyst to steaming to remove aluminum from the framework of the crystalline silicate catalyst;

thereafter dealuminating said catalyst by treating said formulated catalyst with a complexing agent to remove aluminum by extraction from pores of said catalyst deposited therein during the steaming step, thereby providing a silicon/aluminum atomic ratio greater than said initial silicon/aluminum atomic ratio;

calcining said catalyst at an elevated temperature;

wherein said MFI type crystalline silicate catalyst at the conclusion of the steaming and extraction of aluminum has a silicon/aluminum atomic ratio of at least 120; and

contacting the MFI type crystalline silicate catalyst with C₄ to C₁₀ olefins, wherein said catalyst is used to produce ethylene and propylene from the C₄ to C₁₀ olefins.

24. **(Previously Presented)** The process of claim 23 wherein said MFI type crystalline silicate catalyst at the conclusion of steaming and aluminum extraction has a silicon/aluminum atomic ratio of at least 180.

25. **(Previously Presented)** The process of claim 23 wherein said MFI type crystalline silicate catalyst at the conclusion of steaming and aluminum extraction has a silicon/aluminum atomic ratio of at least 300.

26. **(Currently Amended)** A process for producing an olefin cracking catalyst, comprising:

providing an MFI type catalyst containing aluminum and silicon in a crystalline silicate framework to provide an initial silicon/aluminum atomic ratio;

formulating said crystalline silicate catalyst with a silica binder to produce a formulated catalyst containing said MFI type crystalline silicate and the silica binder;

subsequent to the formation of said formulated MFI type crystalline silicate catalyst, subjecting said catalyst to steaming to remove aluminum from the crystalline silicate framework of the catalyst;

thereafter dealuminating said catalyst by treating said catalyst with a complexing agent to remove aluminum by extraction from pores of said catalyst deposited therein during the steaming step, thereby providing a silicon/aluminum atomic ratio greater than said initial silicon/aluminum atomic ratio;

calcining said catalyst particles at an elevated temperature;

wherein said MFI type crystalline silicate catalyst is a catalyst of the ZSM-5 type having an orthorhombic structure which after steaming and extracting has a silicon/aluminum atomic ratio of more than 120; and

contacting the MFI type crystalline silicate catalyst with olefins, wherein said catalyst is used to crack the olefins.

27. (Cancelled).

28. (Currently Amended) The process of claim ~~27~~26 wherein said MFI type crystalline silicate catalyst after aluminum extraction and steaming has a monoclinic structure.

29. (Previously Presented) The process of claim 19 wherein the catalyst is calcined after dealumination at a temperature of from 400°C to 800°C at atmospheric pressure for from 1 to 10 hours.

30. (Previously Presented) The process of claim 19 further comprising crushing the catalyst to a particle size of from 35 to 45 mesh.

31. (Previously Presented) The process of claim 19 wherein the heating in steam is carried out at a temperature of from 425°C to 870°C at a water partial pressure of from 13 kPa to 200 kPa.

32. (Previously Presented) The process of claim 19 wherein the heating in steam is carried out for a period of from 1 to 200 hours.

33. (Previously Presented) The process of claim 23 wherein the heating in steam is carried out at a temperature of from 425°C to 870°C at a water partial pressure of from 13 kPa to 200 kPa.

34. (Previously Presented) The process of claim 23 wherein the heating in steam is carried out for a period of from 1 to 200 hours.

35. **(Previously Presented)** The process of claim 23 wherein the catalyst is used to crack olefins comprised of hydrocarbon feedstocks from a refinery or a steam cracking unit.

36. **(Cancelled).**

37. **(Previously Presented)** The process of claim 23 wherein the catalyst is used to crack feedstocks from a fluidized-bed catalytic cracking (FCC) unit.

38. **(Previously Presented)** The process of claim 23 wherein the catalyst is used at process conditions comprising an inlet temperature of from 500°C to 600°C, an olefin partial pressure of from 0.1 to 2 bars, and an LHSV of 10 to 30 h.⁻¹.

39. **(Cancelled).**

40. **(Previously Presented)** The process of claim 28 where the crystallite size of the monoclinic crystalline silicate is 1 micron or less.

41.-42. **(Cancelled).**

43. **(Previously Presented)** The process of claim 23 wherein the catalyst is used for producing methyl tert-butyl ether (MTBE).

44.-45. **(Cancelled).**

46. **(Previously Presented)** The process of claim 23 wherein the catalyst is used for olefins from a steam cracking unit after butadiene extraction or after butadiene hydrogenation.

47. **(Previously Presented)** The process of claim 23 wherein the catalyst is used for olefins comprised of light cracked naphtha (LCN) or a medium cracked naphtha.

48. **(Cancelled).**

49. **(Previously Presented)** The process of claim 23 wherein the catalyst is used for olefins comprising visbroken naphtha obtained from a visbreaking unit.

50. **(Previously Presented)** The process of claim 23 where the catalyst is used to remove C₅ species from gasoline produced by an oil refinery.

51. **(Previously Presented)** The process of claim 23 where the catalyst is used to crack a feedstock comprising from 10 to 100 wt% olefins.

52. **(Currently Amended)** A process for producing a catalyst for olefin cracking, the processing comprising the steps of:

providing an MFI type catalyst with a crystalline silicate framework;

heating the formulated catalyst in steam to remove aluminum from the crystalline silicate framework;

extracting aluminum from the formulated catalyst by contacting the catalyst with a complexing agent to remove aluminum from pores of the framework deposited therein during the steaming step, thereby increasing the silicon/aluminum atomic ratio of the catalyst;

formulating said MFI type crystalline silicate catalyst with a binder comprising silica to produce a formulated catalyst;

calcining the formulated catalyst at an elevated temperature;

wherein said MFI type crystalline silicate catalyst at the conclusion of the steaming and extraction of aluminum has a silicon/aluminum atomic ratio of at least 120; and

contacting the MFI type crystalline silicate catalyst with olefins, wherein said catalyst is used to crack said olefins.

53. **(Previously Presented)** The process of claim 52 wherein said silica binder is employed in an amount to provide a catalyst containing about 20 wt.% silica and wherein the silicalite catalyst has a monoclinic crystalline structure.

52. **(Previously Presented)** A catalyst for cracking olefins made by the process of claim 19.

53. **(Previously Presented)** A catalyst for cracking olefins made by the process of claim 23.

54. **(Previously Presented)** A catalyst for cracking olefins made by the process of claim 26.

55. **(Previously Presented)** A catalyst for cracking olefins made by the process of claim 52.